CMA CGM Group
CMA Ships engine choice criteria

P. RENAUD – E&T Dept. Manager
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Last update – Our Performance

Revenue
2013: USD 15.9 billion
2014: USD 16.7 billion*

Volumes
2013: 11.4 million TEU
2014: 12.2 million TEU*

655 Offices Worldwide
20,000 Employees Worldwide

170 Shipping lines
400 Ports-of-Call in 150 countries

445 Vessels** (36% owned capacity)
1.6 M TEU**

* As of 30/03/2015
** As of 31/12/2014
Last Update – Group Organization

CMA Ships
Wholly-owned subsidiary of CMA CGM.
Mission: managing all fleet-related operations of group-owned and bare-boat chartered vessels (116 vessels).

* The implementation of the transaction is subject to the prior clearances from the relevant competition authorities; until then OPDR and CMA CGM remain competitors
CMA Ships – Operational Model

SHIPMANAGEMENT
- Marseilles: Fleet 1/2/5/6
- London / CMA SHIPS UK: Fleet 3/4
- Singapore / CCSIC: Fleet 7
- Isle of Man / MIDOCEAN: Fleet 8

CMA SHIPS’ SOLUTIONS
- IT Project Management
- Dry dock
- Newbuildings

MANNING
- CMA SHIPS Singapore
- CMASHIPS Croatia
- CMA SHIPS Ukraine
- CMA SHIPS Romania
- 3rd Party Manning: Philippines, Sri Lanka, China, Madagascar

MANNING
- CMA SHIPS Shanghai

FLEET & NAVIGATION CENTER
- Navcom
- European Marine HR
- French Marine HR
- Finance

SAFETY SECURITY ENVIRONMENT

CMA SHIPS SUPPLY
- Marseilles & London
- Singapore

E&T

June 2015
CMA Ships – Managed Fleet

- 116 vessels in service
- From 100 to 17,859 TEUs
- Prime movers: 84,5% MAN / 15,5% Wärtsilä
- From 3 to 80 MW

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CMA Ships – Engine Choice Criteria
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CAPEX & OPEX

Total Cost of Ownership
CMA Ships – Engine Choice Criteria

What is in the TCO?

Main drivers
TCO Basics
Gaining weight

TCO

Sub-contractor (CAPEX & OPEX)
Engine options prices (CAPEX)
Engine Price (CAPEX)
Fuel (OPEX)
Lubricants (OPEX)
Spare Parts (OPEX)
Sustainable performance

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Main drivers
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Spare Parts (OPEX)
Sustainable performance
Engines are no longer used at one optimal point but in a large operation range.

Engines have to be designed for the entire range.

Main engine operation profiles before and after 2009 (14,000 TEUs)
CMA Ships – Engine Choice Criteria

Today’s management of engine component design and codification have a major negative impact on the vessel’s OPEX:

- No code book and maintenance book under EDI format =
  - Too many wrong orders and deliveries.
  - No way to develop a clean and efficient ERP.
  - Hard work to conduct large fleet order.

- No unified code books between licensees = no possible fleet order.
CMA Ships – Engine Choice Criteria

- Poor sub-component qualities and poor execution lead to extra operation costs.

- Recent examples:

  288 piston rings replaced before 1,500 running hours due to coating peeling off.

  Poor cabling execution: multiple engine stoppages.

  100 head bearings replaced due to fault in bonded layers.
CMA Ships – Engine Choice Criteria

- Crew must be able to maintain the engine in its most efficient condition (= lowest fuel consumption & no downtime).
- Maintenance has to be achievable at the lowest possible cost.
- Reliable operation in the entire load range.
- Engine designers have to provide lifetime proactive services.

High performances on product data sheet is nice... for marketing!
High performance over years matters!
CMA Ships – Engine Choice Criteria

We are looking for:

- High efficiency over a wide operation range.
- Open discussion with the shipyard about the licensees choice and the main components sub-contractor choice.
- Fair market between yard, licensees and subcontractor.
- We must be able to reach the expected parts lifetime whatever the suppliers.
- Unified electronic format maintenance and code books.
- Long TBO.
- Easy maintenance orientated & “Idiot proof” design.
- Lifetime proactive support from the engine designer.
Why have we selected Winterthur G&D X92?
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Fuel (OPEX)
- Positive experience from the RT-Flex96C operated on slow steaming. Common rail is an added value for long slow-steaming operation.
- X92 SFOC curves and de-rating options are in line with our current needs for flexible operation.

Spare Parts (OPEX)
- Proven reliability of the RT-Flex’s electronic components.
- Fundamental upgrade of the RT-Flex weak components (piston, piston rings, fuel pumps, etc.)
Why have we selected Winterthur G&D X92?

- **Maintenance-friendly approach of the design:**
  - Easier access to main components
  - Simplified design of the common rail system
  - Easier maintenance of the ICU
  - Improved design of the fuel pumps

- Easier maintenance = better efficiency along the years

- **Two design improvements to cope with our operations:**
  1. High pressure crosshead lubrication =
     - longer lifetime of the crosshead bearings in slow and super-slow steaming operation.
     - Downtime prevention.
  2. Dedicated lubrication system for the fuel pumps =
     - Longer lifetime of the fuel pumps thanks to a high detergency lubrication.
     - Avoids system oil contamination.
     - Avoids hydraulic component failures due to system oil contamination.
CONCLUSION:

Don’t build engines alone!

Listen to your customers, together we can do better.
Sailing ahead with passion
since 1978

23/04/2015